

Unilateral condylar hyperplasia: A case report and review of literature

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Abstract

Condylar hyperplasia is (CH) an uncommon malformation of the mandible involving change in size and morphology of the condylar neck and head. CH is an anomaly that usually occurs unilaterally and equally affects in both men and women. Hyperplasia of the condyle differentiated into hemimandibular hyperplasia, hemimandibular elongation and CH. Here, we are presenting a case of 17-year-old male patient with unilateral CH and its review of the literature.

Key words: *Condylar hyperplasia, mandibular condyle, unilateral, TMJ pain*

INTRODUCTION

Condylar hyperplasia (CH) is a rare malformation of non-neoplastic origin involving size and morphology of one of the two mandibular condyles.^[1] This growth abnormality is usually unilateral and generally observed in patients between 10 and 30 years of age with no reported race and sex predilection.^[2] The enlargement of condyle results in unilateral elongation of face with deviation of the chin to the contra lateral side.

CH of the mandible is a state of overdevelopment that can lead to facial asymmetry, mandibular deviation, malocclusion and articular dysfunction. The disorder is self-limiting, but as long as it remains active, the asymmetry progresses together with the associated

occlusal changes.^[3] The etiology of the unilateral hyperplasia of the condyle is still under discussion. In the literature, local circulatory problems, endocrine disturbances, traumatic lesions and arthrosis are considered to be etiologic factors of this pathosis.^[2-4]

CASE REPORT

The present case report is about a 17-year-old male patient who was reported with the complaint of gradually developing asymmetry of the right side of the face for past 1 year [Figures 1 and 2]. His history revealed developing asymmetry of the entire right side of the face which he had noticed from a self-photograph. Mandibular deviation toward the left side and overgrowth were noticed 1 year before and progressed slowly until it reached present proportion. He also developed pain in the right temporomandibular joint (TMJ) region while opening the mouth for past 3 months. There was no history of trauma, any systemic diseases, infection, or surgery of the face and jaws. His medical and family histories were non-contributory.

Extra oral examination revealed facial asymmetry due to downward displacement of the entire right mandible and increase in the vertical height of the

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Figure 1: Extra oral photograph showing facial asymmetry and deviation to the left

middle and lower facial thirds on the right side. There was a significant deviation of chin to the left side and slight downward tilt in lip line toward the right side [Figure 1]. There was mild tenderness in his TMJs bilaterally and clicking was heard during movement of the right TMJ. Intraoral examination revealed slight shift of the mandibular midline toward the left side [Figure 3]. Posterior teeth of both the jaws were slightly tilted lingually to maintain occlusion.

Orthopantomograph revealed significant uniform enlargement of the mandibular condyle and elongation and thickening of condylar neck in the right side, comparatively normal condyle of the left side [Figure 4]. The right gonial angle was characteristically rounded off and the mandibular canal was displaced to the lower border of the mandible right side. Computed tomography was performed to characterize the lesion further. 3D-CT apparently showed differences in the size of both condylar heads as well as elongation of the neck of the mandibular condyle right side [Figures 5 and 6]. Clinical and radiographic findings were consistent with a diagnosis of unilateral CH of the right side.

DISCUSSION

CH resulting in facial asymmetry is not only an esthetic problem for an individual, but also a functional disturbance to the TMJs and occlusion. CH of the TMJ is a rare pathology that was first described by Adam's in 1836 as overgrowth of the mandibular condyle; comparable pathology has not been described in any other joint.^[4] CH can be considered to be the end result of primary cartilage formation and secondary bone replacement.^[5]

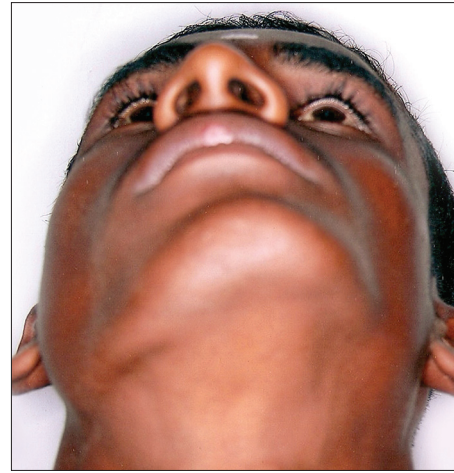


Figure 2: Photograph showing bowing of the mandibular body

The etiology of CH is still unclear. Previous authors have debated whether intrinsic or extrinsic factors regulate the growth of the condyle. The traditional view was that the cartilage of the condyle mimics the epiphyseal cartilage of long bones; therefore the condyle is the primary growth center of the mandible. This theory supports intrinsic factors playing major roles in CH.^[6] An alternative view is that the condyle is just like other parts of the mandible in terms of growth capability; with the only difference being chondrogenesis takes place in the periosteum that covers the head of the condyle.^[7] The degree of vascularity of the tissue and the presence of mechanical stress may initiate chondrogenesis or osteogenesis of the periosteum.^[8] The later theory supports the view that extrinsic factors play a role in CH. Based on these theories, local circulatory problems, previous trauma, hormonal disturbances, abnormal loading and cartilaginous exostosis have been suggested as possible etiologic factors.^[9]

Obwegeser and Makak proposed three types of CH, based on radiographic and clinical characteristics: Hemimandibular hyperplasia (HH), it includes enlargement of condyle, condylar neck, ramus and body with tilting of the occlusal plane; hemimandibular elongation (HE), it includes, condylar neck enlargement and variable displacement of the ramus and body without tilting the occlusal plane; and CH, hyperplasia of condyle alone.^[4] In a study by Chen *et al.* suggested that the term CH should not be used to refer to either HH or HE.^[10]

Prominent features of CH include an enlarged mandibular condyle, elongated condylar neck, outward bowing and downward growth of the body and ramus of the mandible on the affected side, causing



Figure 3: Intra oral photograph showing mild deviation of the mandibular midline to the contralateral side



Figure 4: The panoramic radiograph view showing great discrepancy in size and morphology between the right and left condyles, along with a uniform enlargement of right condylar head and neck

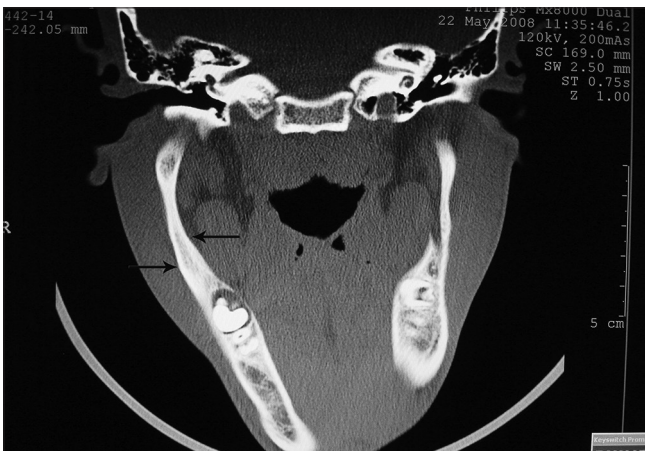


Figure 5: Axial computed tomography picture showing enlarged right condylar head



Figure 6: 3D-computed tomography picture showing uniform enlargement of the right condylar head and neck

fullness of face on that side and flattening of face on the contralateral side.^[11] This deformity has been classified in to two groups by Normann and Painter, the first group includes patients who having an active hyperplastic growth, whereas the second is characterized by a stable situation in which the abnormal growth is completed.^[12] If the deformity has occurred before growth is complete the occlusal plane is usually slanted because of dental compensation, whereas posterior open bite is usually apparent if the deformity occurs after completion of growth.

The clinical characteristics of CH are controversial. Most studies have found that CH occurs between ages 10 and 30 years and it has been suggested that the abnormal growth of the hyperplasia ceases with that general growth and that HH occurs at significantly younger age. Active CH after the growth period was considered as prolongation of growth. Attention to the patient's primary complaint is important for the early diagnosis of CH. Almost one-third of the patients complained not about asymmetry, but rather about

swelling on the contra lateral side, pain and dysfunction; therefore attention must be paid to facial asymmetry even when it is not among the patient complaints.^[13]

Although clinical signs may suggest CH, a radiological examination showing elongation of the neck and head of the condyle is necessary for a definitive diagnosis. Lateral cephalometric radiographs and the linear and angular measurements from the radiographs would provide information to determine whether maxilla or other facial and skull bone are involved. Posteroanterior cephalometric projections are useful for detection of a horizontal shift of the mandibular midline. However, regular pantomographs seem to add more value in the determination of patients with this condition.^[14]

Bone scanning is a non-invasive technique to evaluate whether the hyperplastic growth is still active; commonly 99 technetium phosphate is used.^[15] Histopathologically, widening of the fibrocartilage that covers the condyle, a wide richly vascularized proliferation zone enriched with large cells near its bony aspect and osteoclasts in the

lacunae between new trabeculae formed by surrounding osteoclasts can be observed.^[16]

When evaluating a patient with unilateral CH, numerous entities have to be considered in the differential diagnosis. In our case, hemifacial hypertrophy is distinguishable due to the absence of enlargement of soft-tissue structures of the right side of the face. Osteochondroma and osteoma are distinguishable due to the presence of uniform enlargement of condylar head and neck in our case. HH and elongation are distinguishable due to the absence of ramus enlargement on the affected side.

Treatment depends on the presence or absence of active bone growth. If the bone was deemed to be inactive the treatment was to have been bilateral sagittal split mandibular osteotomies, possibly combined with a maxillary Le Fort I osteotomy if it appeared that the maxilla had shifted to compensate for the shifted occlusal plane of the mandible.^[17] If the growth was found to be active, the treatment would have been a high condylectomy to remove the growth site, combined with further mandibular osteotomies if there was still asymmetry. If a condylectomy is performed in an inactive case there is an undue and unnecessary disruption of the TMJ and conversely if osteotomies are done on an active condyle there is a possibility of further deformity, resulting in failure of the realignment.^[18] Knowledge about such unique unusual cases give information to clinician for early diagnosis and management.

CONCLUSION

Unilateral CH is an uncommon condition which can result into unesthetic look and various clinical problems. Hence early diagnosis and management is must.

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